

## **REMARKS**

### **Status of the Claims**

Claims 1 – 21 are pending. Claims 22 – 30 have been previously canceled. Applicants amend claims 13 and 19 to remedy formality objections. Applicants add new claims 31 – 33. Support for the new claims can be found throughout the specification and at least in claims 7, 8, and 11, as well as the figures.

### **Formal objections and corrections:**

As requested in the Office Action, claims 13 and 19 should be modified in order to use proper American notation for numbers. The Applicants note however that such modifications seem to have been already made to the corresponding publication document No. 2007/0214912.

The Applicants have also made a cursory review of the application in order to try to identify possible minor errors, which also seem to have been already made to the corresponding publication document No. 2007/0214912.

### **Claim rejections - 35 USC § 112:**

The Applicants have taken due note of the Office Action's rejection of claims 12 to 15 and 19 to 20 due to the term "grade". With reference to paragraphs [0065] and [0066] of the present application, "grade" in the context of these claims should be interpreted to mean a class of pigments obtained using different specific leaching and/or coating steps, which give the pigments different chemical and/or surface characteristics. "Grade" does not refer to specific particle size ranges per se in this context.

### **Claim rejections - 35 USC § 103:**

The Applicants have taken due note of the Office Action's rejection of claims 1 to 21 for obviousness in view of a variety of references and combinations thereof.

#### *Response to rejection of claims 1 to 4, 7 to 10 and 16:*

In particular, the Applicants have noted the Office Action's rejection of claims 1 to 4,

7 to 10 and 16 as being obvious with respect to the document "Characterization of Steel Dust from the Sorel-Tracy Region and Technologies for their Treatment" (hereafter referred to as JEBRAK et al.). With respect, the Applicants disagree and present the following arguments to that effect.

On its 5<sup>th</sup> page, the Office Action states that "JEBRAK does not teach using an anionic surfactant on the slurry obtained in step C". The Office Action goes on to posit that it would however have been obvious to one of ordinary skill in the art to add an anionic surfactant to the slurry, alleging that JEBRAK et al. suggest adding a deflocculant, as per page 3, paragraph 7 of JEBRAK et al., and an appropriate dispersant, as per page 33, paragraph 8 of JEBRAK et al., as a means of improving the separation of magnetite and ferrite particles. However, a proper reading of this reference reveals that it does not teach or suggest what the Office Action alleges.

The Applicants firstly turn to page 3, paragraph 7 of JEBRAK et al. Upon review of the original French document, JEBRAK et al. state the following at that location:

"At this stage it is clear that it is necessary to continue research before concluding on potential large-scale applications. A number of important variables need to be precisely determined, notably:

- the nature and the quality of the deflocculant [as a] function of various dust characteristics;
- the concentration of dust powder in the liquid;
- the flow rates in the separator cell." (page 3, paragraph 7 of JEBRAK et al., square brackets and underline added)

Clearly, JEBRAK et al. teach that they do not know what kind of "deflocculant" to use with the dust.

On page 33, paragraph 8, JEBRAK et al. state that wet magnetic separation can be done using an "appropriate dispersant" and/or thermal treatment followed by a dry magnetic separation.

Thus, JEBRAK et al. suggest in a general way that “dispersant” or “deflocculant” may be used in its process. However, JEBRAK et al. do not render any of the claims obvious.

Firstly, the terms “dispersant” and “deflocculant” encompass such a vast number of possible chemical classes and compounds that a person skilled in the art would not have been taught, suggested or motivated to use an anionic surfactant in particular.

Secondly, JEBRAK et al. teach away from using an anionic surfactant. Without exception throughout JEBRAK et al., the only “dispersant” or “deflocculant” disclosed or suggested is methanol. JEBRAK et al. do not imply or suggest another type of dispersant or deflocculant, nor do they hint at what criteria should be used in selecting such a dispersant or deflocculant.

Indeed, the use of water and/or methanol as described in JEBRAK et al. in no way would suggest to a person skilled in the art to use an anionic surfactant. First, Methanol is a single-carbon aliphatic alcohol that is completely miscible in water. The association of methanol with water is very different from the association of surfactants, including anionic surfactants, with water. Surfactants tend to form a two-phase system in aqueous solutions because of their hydrophobic heads and hydrophilic ends, while methanol and other alcohols are dispersed and dissolved in water. Methanol-water solutions are homogeneous while surfactant-water solutions are heterogeneous. Second, methanol would interact differently with the ferrites adsorbed on the magnetite in the EAF dust slurry as opposed to the interaction with an anionic surfactant. Thus, the teaching of methanol in JEBRAK et al. would not suggest and in fact teaches away from using an anionic surfactant instead.

Thirdly, the use of an anionic surfactant in the process of claim 1 enables improved effects in dispersing the ferrite particles adsorbed on the magnetite particles and in separating the different fractions in the slurry.

Thus, not only does the Office Action not establish a *prima facie* case of obviousness since JABREK et al. do not teach or suggest an anionic surfactant, but the obviousness rejection cannot stand since the anionic surfactant enables improved results over JEBRAK et al.

*Response to rejection of claims 5 and 6:*

The Applicants have also noted the Office Action's rejection of claims 5 and 6 as being obvious with respect to JEBRAK et al. combined with ITOH et al. ("Anomalous Increase of Coercivity in Iron Oxide Powder Coated with Sodium Polyphosphate" Vol. Mag 13, No. 5, IEEE Transactions on Magnetics, p. 1385, 1977).

In particular, the Office Action states that it would have been obvious "to add sodium metaphosphate to the hydrometallurgy process taught by Jebrak as a surfactant in order to keep the particles separated, since sodium metaphosphate is known to reduce the magnetic attraction between iron oxide particles" (page 7 of the Office Action). With respect, the Applicants disagree and present the following arguments to that effect.

The combination of JEBRAK et al. and ITOH is improper and does not establish a *prima facie* case of obviousness.

As briefly discussed above, JEBRAK et al. describe a process for treating steel dust including steps of washing, filtering, adding methanol and separating ferrite pigments. JEBRAK et al. disclose a methanol dispersant only and do not suggest the use of any other compound or class of compounds.

ITOH, on the other hand, discloses simple and controlled experiments and observations of the coercivity of iron oxides with dried-on sodium metaphosphate. ITOH does not disclose or suggest steel dust or any other complex mixture as a source material. ITOH does not disclose or suggest the presence of ferrite particles. ITOH does not disclose or suggest any kind of process for treating the mixture to separate different phases from each other. Furthermore, ITOH's use of sodium metaphosphate is starkly different from JEBRAK's use of methanol dispersant. In ITOH, a solution of sodium metaphosphate was added to the iron oxides which then "were dried at room temperature to remove the excess water under reduced pressure, then were heated from room temperature to 300°C for 5 minutes and allowed to cool." The iron oxides with dried-on sodium metaphosphate were then analyzed to observe coercivity. ITOH in no way discloses or suggests that sodium metaphosphate could be used as a dispersant or deflocculant as alleged by the Office Action.

In summary, the disclosure of the dried-on sodium metaphosphate in ITOH as compared with the disclosure of methanol dispersant in JEBRAK et al. are so different as to provide no basis for a *prima facie* case of obviousness against any of the claims.

*Response to rejection of claims 11-15 and 17-21:*

The Applicants have also noted the Office Action's rejection of claims 11-15 and 17-21 as being obvious with respect to JEBRAK et al. combined with US patent No. 4,190,422 (hereinafter referred to as HITZROT).

The combination of JEBRAK et al. and HITZROT is improper and does not establish a *prima facie* case of obviousness. In any case, the Applicants submit that the rejections of claims 11-15 and 17-21 are rendered moot in view of the above arguments as to the patentability of claim 1 and all of its dependant claims.

**Conclusion**

The Applicants believe that the application is in condition for allowance and respectfully request withdrawal of the rejections along with an indication of allowance. Applicant would like to thank the Examiner for his time and consideration of this case. If a telephone conversation would help clarify any issues, or help expedite prosecution of, this case, Applicant invites the Examiner to contact the undersigned at (617) 248-5222. Additionally, please charge any fees that may be required or credit any overpayment to our Deposit Account 03-1721.

Respectfully Submitted,  
CHOATE, HALL & STEWART LLP

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/Jeffrey E. Buchholz/  
Jeffrey E. Buchholz.  
Agent for Applicant  
Registration Number 60,544

PATENT DEPARTMENT  
CHOATE, HALL & STEWART LLP  
Two International Place  
Boston, Massachusetts 02110  
Telephone: (617) 248-5000  
Facsimile: (617) 502-5002  
patentdocket@choate.com